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Mr. J. F. Warner's ruling machine.

Fig. 1

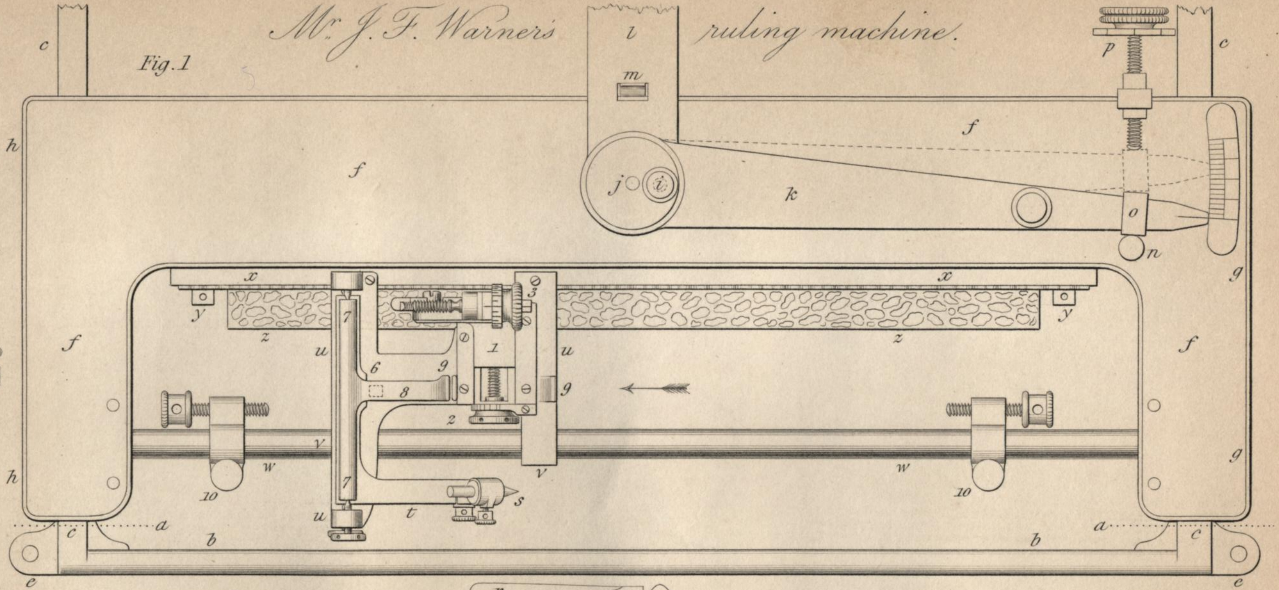


Fig. 2

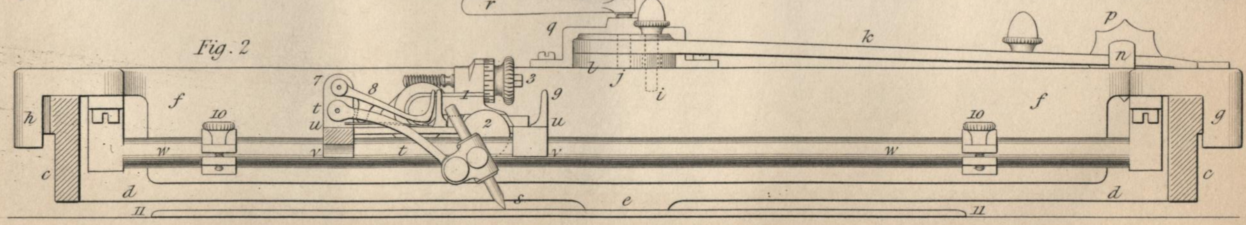


Fig. 6

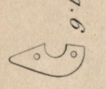
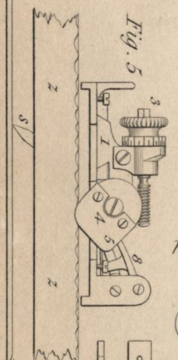
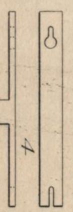


Fig. 5



Fig's. 3



Drawn by C. Varley

Engraved by G. Gladwin

FINE ARTS.

No. I.

IMPROVED RULING-MACHINE FOR ENGRAVERS.

The SILVER MEDAL was presented to MR. J. F. WARNER, No. 13 Spann's Buildings, St. Pancras, for his Improved Ruling-Machine for Engravers.

No. 13 *Spann's Buildings,*
February 1841.

SIR

I WILL thank you to lay before the Society for the Encouragement of Arts, &c., the accompanying description and drawing of an improved Ruling-Machine for the use of engravers, by which waved line-tints may be ruled exactly resembling those ruled in by hand.

Machines for this purpose have hitherto had the framework made of wood liable to be affected by changes in the weather, and thereby deranging the performance.

In the present machine the frame is one entire piece of cast-iron; and by taking out the three screws which fasten it to the board, and then putting a soft pad upon each of the feet, it may be placed immediately upon the plate, its own weight being quite sufficient to keep it steady for all purposes of ruling, and the size of the plate in that case is unlimited.

I feel it to be quite unnecessary to state to the Society the defects of machine waved-line ruling arising from the guide which conducts the etching points passing through the same waved line throughout the whole of the tints, and thereby causing the rowiness or pattern-like appearance, which is completely obviated by the present contrivance.

Should the Society consider the matter worthy of notice, I shall be happy to attend and furnish any other information that may be considered necessary.

I am, Sir, &c. &c.

JOHN F. WARNER.

W. A. GRAHAM, Esq.
Secretary, &c. &c.

Ruling-machines for engravers, says Mr. Warner, have hitherto had their framework constructed of wood, which, by being affected by changes of temperature, are apt to derange the engraver's work.

To obviate this inconvenience, Mr. Warner has constructed the frame of his improved ruling-machine of one entire piece of cast-iron, the weight of which is sufficient to keep it in its right position on the copper when the ruling is in progress, so that the size of the plate (as far as regards the use of this machine) is unlimited. In order to prevent the plate from being injured by the feet of the machine, a soft pad is attached to each foot.

The principal object, however, of Mr. Warner's machine is to rule in waved-line tints, which shall exactly resemble those ruled in by hand, and thereby avoid the rowiness or regularity of pattern which is effected by the ordinary waved-line ruling-machine.

The general arrangement of the parts of Mr. Warner's machine is similar to that of the improved ruling-machine of Mr. Percy Heath, for which he obtained the Society's silver medal in 1836, and which is described in the 51st volume of the Society's Transactions.

In the accompanying plate, fig. 1 is a plan of part of the machine, which consists of a square iron frame cast in one piece, and standing on three feet.

Fig. 2, an elevation of the machine, with section through the dotted lines *a a* in fig. 1.

bb is the front of the machine; *cc*, parts of the two sides, which are broken off in the figure for want of space. The fourth side *dd* is seen in fig. 2, with one of the feet *e*.

The surface of the frame is planed very evenly throughout, and the sides are perfectly straight and parallel to each other. Over the frame is laid the bridge *ff*, which is also made in one piece, the underside of which is so planed as to lie quite evenly on the frame; and the inside of each of the ends *g h* is also required to be perfectly parallel, the end *g* fitting close to the side *c*, and being kept in close contact therewith by a spring within the end *h*. The accuracy of these parts is requisite to ensure the bridge sliding in parallel directions.

To the bridge is attached the ruling apparatus, which is carried in the front part of the bridge, hollowed out to receive the same.

The bridge *f* is moved the required short distance for every line by two centres *i* and *j*, placed near to each other, and are alternately fast and loose, and so step one before the other in turns, that the exact distance is accurately repeated. By the centre *i* of the index *k*, it is fixed to the bridge *f*, and the strap *l* is connected to the index by the centre *j*. In the strap *l* there is an aperture *m*, through which a spring rises, the object of which is to keep the index *k* in contact with the stop *n*, by drawing towards the back of the machine the centre end of the index, which is armed with a steel collar *o*. *p* is a micrometer-headed screw, to determine the range of the index *k*, and to alter the distance of the lines for graduating any required tint. The strap *l* is held fast by the binding screw *r* (fig. 2); and when so fixed, its centre *j* becomes also a centre for the index, which may then be moved from the stud *n* to the screw *p*, as shewn by the dotted lines. The bridge will then be moved the required distance, and a line may be ruled.

In order to return the index *k* to the stop *n*, the screw *r* must be loosened, and the strap *l* will be moved by the action of the spring *m*, the strap to be again secured by the binding screw *r*. The index *k* is again to be moved, and the operation repeated.

The point *s*, which draws the required line, is not touched by the hand, and as the plates are not always perfectly even, the point is made so as to meet the inequalities of surface without any lateral deviation.

The point *s* is mounted on an arm *t*, whose long axis is placed in a horizontal carriage *u u*, at right angles to the lines required to be ruled. The carriage *u u* is moved by hand in the direction shewn by the arrow, the point *s* being lowered to mark the required line, and allowed to rise when the carriage is returning.

The carriage rests on, and traverses the flat bar *x* and the cylindrical rod *w w*, both of which are fixed to the bridge *f*, and have three bearings, the two front ones *v v* fitting the cylindrical rod as saddles; the third bearing removed from the carriage is shewn by the figures 3 and 4.

The distance of the support *x* from the rod *w* is about three times as much as the distance of the ruling point from the rod *w*, so that if crooks are made in *x*, and the carriage is moved so as to follow such crooks, a lateral motion is given to the point *s*, and the lines drawn by it are to one-third the scale of such crooks. If the same waved line is to be repeated, such waves are made in the edge of a blade fastened to *x x* by screws *y y*, the third bearing being made sufficiently narrow to traverse the waves.

But one of the main objects of this improved machine being to obtain dissimilarly waved lines, a wide surface of box-wood *z z* is fixed to the blade just level with the bottom of the waves, and the whole is attached by the screws *y y* to the front of *x x*.

No. 1 is a dovetailed slide on which the third foot of the carriage is mounted.

Nos. 2 and 3 are micrometer-screws to regulate the variation in the waved lines to be drawn.

Fig. 5 shews the back part of the carriage with the third foot resting on the waved surface *z*. 4 is a plate of steel screwed to a disk or rack which is turned by the tangent screw 3, so as to bring down the corner 5 when required.

When smaller waves are required, the plate 6 may be substituted for the plate 4.

No part of the ruling point *s* is touched by hand.

Under the projection 6 a spring is fixed which keeps the point up; over the arm *t* a long axis 7 7 is placed, with a central arm 8, from under which a stud projects to the spring; this arm 8 (as seen in fig. 2) is put down by the finger, whereby it presses down the spring, and allows the ruling point to fall by its own weight; 9 9 are finger-holds by which to move the carriage; 10 10 are stops to determine the length of the ruled line; and 11 11 the plate to be ruled.